

REMARKS

The Office Action dated June 16, 2008 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1, 3-12, and 14-20 are now pending in this application. Claims 1-20 stand rejected. Claims 2 and 13 have been canceled.

The objection to the specification is respectfully traversed. Applicants have amended the title to clearly indicate the invention to which the claims are directed. Accordingly, for at least these reasons, Applicants request that the objection to the specification be withdrawn.

The objection to Claims 1-11 are respectfully traversed. Applicants have amended Claim 1 to recite "a first partial enclosure comprising a hard plastic material . . . a second partial enclosure . . . comprising a soft plastic material...." Accordingly, Applicants submit that Claim 1 clearly recites the elements of the invention as claimed.

Claim 2 has been canceled. Claims 3-11 depend from independent Claim 1. When the recitations of Claims 3-11 are considered in combination with the recitations of Claim 1, Applicants submit that Claims 3-11 likewise clearly recite the elements of the invention as claimed.

For at least the reasons set forth above, Applicants request that the objection to Claims 1-11 be withdrawn.

The objection to Claims 2 and 13 are respectfully traversed. Applicants have canceled Claims 2 and 13. Accordingly, Applicants request that the objection to Claims 2 and 13 be withdrawn.

The objection to Claims 12-20 are respectfully traversed. Applicants have amended Claim 12 to recite an enclosure for an ultrasonic transceiver unit and an acoustic lens, wherein the enclosure includes "a first portion comprising a tip, the tip having an opening sized to receive the ultrasonic transceiver unit therethrough; and a second portion integrally

formed with the first portion to cover the opening, the second portion having an inner surface in contact with the acoustic lens.” Applicants submit that Claim 12 positively recites both the ultrasonic transceiver unit and an acoustic lens. Accordingly, Applicants submit that Claim 12 does not recite limitations upon structures that are not positively claimed.

Claim 13 has been canceled. Claims 14-20 depend from independent Claim 12. When the recitations of Claims 14-20 are considered in combination with the recitations of Claim 12, Applicants submit that Claims 14-20 likewise clearly recite the elements of the invention as claimed.

For at least the reasons set forth above, Applicants request that the objection to Claims 12-20 be withdrawn.

The rejection of Claims 1-3, 8-10, 12-14, and 19 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,127,410 to King, et al. (hereinafter referred to as “King”) is respectfully traversed.

Initially, Applicants respectfully submit that King does not describe or suggest the claimed invention. For example, King does not describe or suggest an enclosure for use with an ultrasonic probe, wherein an acoustic lens is positioned between and in direct contact with a second partial enclosure and an ultrasonic transceiver unit. Rather, King describes a probe that includes a backing layer positioned between and in direct contact with a plastic film and an RFI screen such that the RFI screen, a housing, a fluid layer, and a first lens subassembly are positioned between the backing layer and the transducer array.

Moreover, Applicants respectfully traverse the assertion on page 4 of the Office Action that Applicants have not “disclosed that arranging the lens to be in direct contact with the second enclosure solves a particular problem or presents a specific advantage over the prior art.” Applicants submit that such a disclosure is made at, for example, paragraph [0034] of the specification. Specifically, paragraph [0034] discloses that the “front face of the acoustic lens 116 is in contact with the backside of the thin film part of the partial enclosure 124. As the partial enclosure 124 is thin film in this part, the attenuation of ultrasonic waves

can be negligible in this part.” Applicants also traverse the assertions on page 4 of the Office Action that “one of ordinary skill in the art would expect Applicant’s invention to work equally well with or without a grease layer between the lens and the second enclosure” and that “it would have been obvious . . . to have modified the transducer of King (‘410) to eliminate the grease layer 31 between the lens and the film in order to achieve the claimed invention.” Applicants submit that King teaches away from such a conclusion at, for example, column 5, lines 10-17. Specifically, King describes the necessity of the grease film within the transducer described by King, in that:

“Acoustic grease 31 lubricates the contacting surfaces of lens section 28 and lens or backing 27 so that the rotating lens section may move relative to the stationary housing and second lens subassembly affixed thereto without rippling the film layer 25 or causing damage thereto, and also serves to seal and keep air out of the junction between lens section 27 and 28.”

As such, Applicants submit that the grease layer is in fact necessary to the proper functionality of the transducer described by King.

King describes an ultrasonic transducer probe (10) that includes an ultrasonic transducer array (16) formed of piezoelectric material and a first lens subassembly that includes a compound lens (20). The transducer array (16) and the compound lens (20) are mounted within a housing (21) that is covered by an epoxy seal (22). Openings (23 and 24) are provided in the housing (21) and the seal (22) to pass ultrasonic signals to an internal body channel (12) of a patient. The openings (23 and 24) are filled and sealed by a plastic film (25) and a backing layer (27). An RFI screen (29) is embedded in the backing layer (27). A small space between the first lens subassembly and a second lens subassembly is filled with a thin layer (31) of a low vapor fluid, such as an oil. Notably, King does not describe or suggest an ultrasonic probe that includes an ultrasonic transceiver unit, an acoustic lens, a first partial enclosure, and a second partial enclosure, wherein the acoustic lens is positioned between and in direct contact with the second partial enclosure and the ultrasonic transceiver unit. Rather, King describes a probe that includes a backing layer

positioned between and in direct contact with a plastic film and an RFI screen such that the RFI screen, a housing, a fluid layer, and a first lens subassembly are positioned between the backing layer and the transducer array.

Claim 1 recites an ultrasonic probe including “an ultrasonic transceiver unit; an acoustic lens; and an enclosure that encloses the ultrasonic transceiver unit and the acoustic lens, the enclosure comprising: a first partial enclosure comprising a hard plastic material having an opening at the tip, the ultrasonic transceiver unit extending through the opening; and a second partial enclosure integrally formed with the first partial enclosure so as to cover the ultrasonic transceiver unit extending through the opening of the first partial enclosure, the second partial enclosure comprising a soft plastic material, the acoustic lens positioned between and in direct contact with the second partial enclosure and the ultrasonic transceiver unit.”

King does not describe or suggest an ultrasonic probe, as recited in Claim 1. More specifically, King does not describe or suggest an ultrasonic probe that includes an ultrasonic transceiver unit, an acoustic lens, a first partial enclosure, and a second partial enclosure, wherein the acoustic lens is positioned between and in direct contact with the second partial enclosure and the ultrasonic transceiver unit. Rather, King describes a probe that includes a backing layer positioned between and in direct contact with a plastic film and an RFI screen such that the RFI screen, a housing, a fluid or grease layer, and a first lens subassembly are positioned between the backing layer and the transducer array.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over King.

Claim 2 has been canceled. Claims 3 and 8-10 depend from independent Claim 1. When the recitations of Claims 3 and 8-10 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3 and 8-10 likewise are patentable over King.

Claim 12 recites an enclosure for an ultrasonic transceiver unit and an acoustic lens. The enclosure includes “a first portion comprising a tip, the tip having an opening sized to receive the ultrasonic transceiver unit therethrough; and a second portion integrally formed with the first portion to cover the opening, the second portion having an inner surface in contact with the acoustic lens.”

King does not describe or suggest an enclosure for an ultrasonic transceiver unit and an acoustic lens, as recited in Claim 12. More specifically, King does not describe or suggest an enclosure that includes a second portion integrally formed with a first portion, wherein the second portion has an inner surface in contact with the acoustic lens. Rather, King describes a probe that includes a backing layer positioned between and in direct contact with a plastic film and an RFI screen such that the RFI screen, a housing, a fluid or grease layer, and a first lens subassembly are positioned between the backing layer and the transducer array.

Accordingly, for at least the reasons set forth above, Claim 12 is submitted to be patentable over King.

Claim 13 has been canceled. Claims 14 and 19 depend from independent Claim 12. When the recitations of Claims 14 and 19 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 14 and 19 likewise are patentable over King.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-3, 8-10, 12-14, and 19 be withdrawn.

The rejection of Claims 4-7, 11, 15-18, and 20 under 35 U.S.C. § 103(a) as being unpatentable over King in view of U.S. Patent 5,928,154 to Silber, et al. (hereinafter referred to as “Silber”) is respectfully traversed.

King is described above. Silber describes an ultrasound probe (100) including a probe casing (101) that includes an inner housing (102), a rear housing (103), and a grip layer (104). A transducer lens is positioned at a distal end (106) of the ultrasound probe (100), and a cable assembly (110) is attached to a proximal end (108) of the ultrasound probe (100) for

carrying signals between the ultrasound probe (100) and an ultrasound imaging system. The grip layer (104) is formed circumferentially around a substantial portion of a length of the inner housing (102). The grip layer (104) may be a polymeric thermoplastic elastomer in order to provide high friction characteristics that allow for good control of the ultrasound probe (100) with maximized comfort and control in a user's hand.

Claim 1 recites an ultrasonic probe including "an ultrasonic transceiver unit; an acoustic lens; and an enclosure that encloses the ultrasonic transceiver unit and the acoustic lens, the enclosure comprising: a first partial enclosure comprising a hard plastic material having an opening at the tip, the ultrasonic transceiver unit extending through the opening; and a second partial enclosure integrally formed with the first partial enclosure so as to cover the ultrasonic transceiver unit extending through the opening of the first partial enclosure, the second partial enclosure comprising a soft plastic material, the acoustic lens positioned between and in direct contact with the second partial enclosure and the ultrasonic transceiver unit."

Neither King nor Silber, considered alone or in combination, describes or suggests an ultrasonic probe, as recited in Claim 1. More specifically, neither King nor Silber, considered alone or in combination, describes or suggests an ultrasonic probe that includes an ultrasonic transceiver unit, an acoustic lens, a first partial enclosure, and a second partial enclosure, wherein the acoustic lens is positioned between and in direct contact with the second partial enclosure and the ultrasonic transceiver unit. Rather, King describes a probe that includes a backing layer positioned between and in direct contact with a plastic film and an RFI screen such that the RFI screen, a housing, a fluid or grease layer, and a first lens subassembly are positioned between the backing layer and the transducer array, and Silber describes an ultrasound probe that includes a grip layer comprising a polymeric thermoplastic elastomer in order to provide high friction characteristics that allow for good control of the ultrasound probe with maximized comfort and control in a user's hand.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over King in view of Silber.

Claims 4-7 and 11 depend from independent Claim 1. When the recitations of Claims 4-7 and 11 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 4-7 and 11 likewise are patentable over King in view of Silber.

Claim 12 recites an enclosure for an ultrasonic transceiver unit and an acoustic lens. The enclosure includes “a first portion comprising a tip, the tip having an opening sized to receive the ultrasonic transceiver unit therethrough; and a second portion integrally formed with the first portion to cover the opening, the second portion having an inner surface in contact with the acoustic lens.”

Neither King nor Silber, considered alone or in combination, describes or suggests an enclosure for an ultrasonic transceiver unit and an acoustic lens, as recited in Claim 12. More specifically, neither King nor Silber, considered alone or in combination, describes or suggests an enclosure that includes a second portion integrally formed with a first portion, wherein the second portion has an inner surface in contact with the acoustic lens. Rather, King describes a probe that includes a backing layer positioned between and in direct contact with a plastic film and an RFI screen such that the RFI screen, a housing, a fluid or grease layer, and a first lens subassembly are positioned between the backing layer and the transducer array, and Silber describes an ultrasound probe that includes a grip layer comprising a polymeric thermoplastic elastomer in order to provide high friction characteristics that allow for good control of the ultrasound probe with maximized comfort and control in a user's hand.

Accordingly, for at least the reasons set forth above, Claim 12 is submitted to be patentable over King in view of Silber.

Claims 15-18 and 20 depend from independent Claim 12. When the recitations of Claims 15-18 and 20 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 15-18 and 20 likewise are patentable over King in view of Silber.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 4-7, 11, 15-18, and 20 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully submitted,



Eric T. Krischke
Registration No. 42,769
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070